Process Mining: General Introduction

Ana Karla Alves de Medeiros

Eindhoven University of Technology
Department of Information Systems
a.k.medeiros@tue.nl
Motivation

1. Get Ready
2. Travel by Train
3. Conference Starts
4. Join Reception
5. Have Dinner
6. Go Home
7. Travel by Train
Motivation

• Time consuming
  – Paper procedures
  – Meetings

• Error prone
  – Different people have different views about a same process
  – Information about the process may be incomplete
Motivation – more cases may be possible!

1. Get Ready
2. Travel by Train
3. Conference Starts
4. Join Reception
5. Have Dinner
6. Go Home
7. Travel by Train

1. Get Ready
2. Travel by Car
3. Conference Starts
4. Give a Talk
5. Join Reception
6. Have Dinner
7. Go Home
8. Pay Parking
9. Travel by Car
Process Mining

Event Log

Mining Techniques

1. Start
2. Get Ready
3. Travel by Car
4. Conference Starts
5. Join Reception
6. Have Dinner
7. Go Home
8. Pay Parking
9. Travel by Car
10. End

1. Start
2. Get Ready
3. Travel by Car
4. Beta Event Starts
5. Visit Brewery
6. Have Dinner
7. Go Home
8. Travel by Car

1. Start
2. Get Ready
3. Travel by Car
4. Conference Starts
5. Join Reception
6. Have Dinner
7. Go Home
8. Pay Parking
9. Travel by Car
10. End

Start
Get Ready
Travel by Car
Travel by Train
BETA PhD Day Starts
Visit Brewery
Have Dinner
Go Home
Travel by Car
Pay for Parking
End

Mined Model
Process Mining

• Before deployment
  – Objective picture of how the process has been executed

• After deployment
  – Feedback mechanism
Process Mining

Event Log

Mining Techniques

Process Model

Organizational Model

Social Network

Performance Analysis

Auditing/Security

Mined Models
Tools

- www.processmining.org
- ProM
- ProMimport
- Free tools!
Case Studies
Case Study: Municipality

• Objectives
  – Discover the most frequent paths
  – Compare prescribed models with executed ones and, if necessary, mine models that describe the current situation
Case Study: Bezwaar – 1st Most frequent path (19% cases)
Prescribed Model

Mined Model

/faculteit technologie management
Case Study: ASML

• Objective
  – Reduce the test period of manufactured wafer scanners

• Questions
  How are the tests actually executed?
  How compliant are the actual test executions to the reference process?
  Where is the most time spent in the test process?
ASML: Results

Report “Process Mining of Test Processes: A Case Study”